

PATENT COOPERATION TREATY

EO/US
PCT/KR00/00718

PCT

NOTIFICATION OF ELECTION

(PCT Rule 61.2)

From the INTERNATIONAL BUREAU

To:

Commissioner
US Department of Commerce
United States Patent and Trademark
Office, PCT
2011 South Clark Place Room
CP2/5C24
Arlington, VA 22202
ETATS-UNIS D'AMERIQUE
in its capacity as elected Office

Date of mailing: 18 January 2001 (18.01.01)	
International application No.: PCT/KR00/00718	Applicant's or agent's file reference: 070-PA934
International filing date: 05 July 2000 (05.07.00)	Priority date: 10 July 1999 (10.07.99)
Applicant: PARK, Seung, Wook	

1. The designated Office is hereby notified of its election made:

☒ in the demand filed with the International preliminary Examining Authority on:
17 November 2000 (17.11.00)

☐ in a notice effecting later election filed with the International Bureau on:

2. The election ☒ was
☐ was not

made before the expiration of 19 months from the priority date or, where Rule 32 applies, within the time limit under Rule 32.2(b).

The International Bureau of WIPO 34, chemin des Colombettes 1211 Geneva 20, Switzerland Facsimile No.: (41-22) 740.14.35	Authorized officer: J. Zahra Telephone No.: (41-22) 338.83.38
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PATENT COOPERATION TREATY

From the
INTERNATIONAL PRELIMINARY EXAMINING AUTHORITY

PCT

NOTIFICATION OF TRANSMITTAL OF INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Rule 71.1)

To: PARK, Gil Eem #401, New Seoul Bldg., 828-8, Yeoksam-dong, Kangnam-gu. Seoul 135-080, Republic of Korea

Date of mailing <i>(day/month/year)</i> 19 OCTOBER 2001 (19.10.2001)

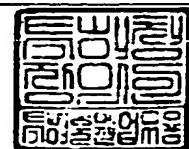
Applicant's or agent's file reference	IMPORTANT NOTIFICATION
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International application No. PCT/KR00/00718	International filing date <i>(day/month/year)</i> 05 JULY 2000 (05.07.2000)	Priority date <i>(day/months/year)</i> 10 JULY 1999 (10.07.1999)
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Applicant 911 COMPUTER CO., LTD. et al

<ol style="list-style-type: none"> 1. The applicant is hereby notified that International Preliminary Examining Authority transmits here with the international preliminary examination report and its annexes, if any, established on the international application. 2. A copy of the report and its annexes, if any, is being transmitted to the International Bureau for communication to all the elected Offices. 3. Where required by any of the elected Offices, the International Bureau will prepare an English translation of the report (but not of any annexes) and will transmit such translation to those Offices. 4. REMINDER The applicant must enter the national phase before each elected office by performing certain acts (filing translations and paying national fees) within 30 months from the priority date (or later in some Offices) (Article 39(1)) (see also the reminder sent by the International Bureau with Form PCT/IB/301). Where a translation of the international application must be furnished to an elected Office, that translation must contain a translation of any annexes to the international preliminary examination report. It is the applicant's responsibility to prepare and furnish such translation directly to each elected Office concerned. For further details in the applicable time limits and requirements of the elected Offices, see Volume II of the PCT Applicant's Guide.

Name and mailing address of the IPEA/KR Korean Intellectual Property Office Government Complex-Daejeon, Dunsan-dong, Seo-gu. Daejeon Metropolitan City 302-701, Republic of Korea Facsimile No. 82-42-472-7140	Authorized officer COMMISSIONER Telephone No. 82-42-481-5210
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PATENT COOPERATION TREATY

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INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference	FOR FURTHER ACTION		See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)
International application No. PCT/KR00/00718	International filing date (day/month/year) 05 JULY 2000 (05.07.2000)	Priority date (day/month/year) 10 JULY 1999 (10.07.1999)	
International Patent Classification (IPC) or national classification and IPC IPC7 G06F 1/00			
Applicant 911 COMPUTER CO., LTD. et al			

1.	This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.
2.	<p>This REPORT consists of a total of <u>3</u> sheets, including this cover sheet.</p> <p><input type="checkbox"/> This report is also accompanied by ANNEXES, i.e., sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).</p> <p>These annexes consist of a total of _____ sheets.</p>
3.	<p>This report contains indications relating to the following items:</p> <ul style="list-style-type: none"> I <input checked="" type="checkbox"/> Basis of the report II <input type="checkbox"/> Priority III <input type="checkbox"/> Non-establishment of opinion with regard to novelty, inventive step and industrial applicability IV <input type="checkbox"/> Lack of unity of invention V <input checked="" type="checkbox"/> Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement VI <input type="checkbox"/> Certain documents cited VII <input type="checkbox"/> Certain defects in the international application VIII <input type="checkbox"/> Certain observations on the international application

Date of submission of the demand 17 NOVEMBER 2000 (17.11.2000)	Date of completion of this report 15 OCTOBER 2001 (15.10.2001)
Name and mailing address of the IPEA/KR Korean Intellectual Property Office Government Complex-Daejeon, Dunsan-dong, Seo-gu, Daejeon Metropolitan City 302-701, Republic of Korea Facsimile No. 82-42-472-7140	Authorized officer CHO, Ji Hun Telephone No. 82-42-481-5993



INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.

PCT/KR00/00718

I. Basis of the report

1. With regard to the elements of the international application:*

- ☒ the international application as originally filed
- ☒ the description:
 pages 1-16, as originally filed
 pages, filed with the demand
 pages, filed with the letter of
- ☒ the claims:
 pages 17-20, as originally filed
 pages, as amended (together with any statement) under Article 19
 pages, filed with the demand
 pages, filed with the letter of
- ☒ the drawings:
 pages 1/6-6/6, as originally filed
 pages, filed with the demand
 pages, filed with the letter of
- ☐ the sequence listing part of the description:
 pages, as originally filed
 pages, filed with the demand
 pages, filed with the letter of

2. With regard to the language, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language _____ which is

- ☐ the language of a translation furnished for the purposes of international search (under Rule 23.1(b)).
- ☐ the language of publication of the international application (under Rule 48.3(b)).
- ☐ the language of the translation furnished for the purposes of international preliminary examination (under Rules 55.2 and/or 55.3).

3. With regard to any nucleotide and/or amino acid sequence disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

- ☐ contained in the international application in written form.
- ☐ filed together with the international application in computer readable form.
- ☐ furnished subsequently to this Authority in written form.
- ☐ furnished subsequently to this Authority in computer readable form.
- ☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
- ☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. The amendments have resulted in the cancellation of:

- ☐ the description, pages _____
- ☐ the claims, Nos. _____
- ☐ the drawings, sheet _____

5. ☐ This opinion has been drawn as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).**

* Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this opinion as "originally filed." and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17).

** Any replacement sheet containing such amendments must be referred to under item I and annexed to this report.

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.

PCT/KR00/00718

V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Claims	1-12	YES
	Claims	none	NO
Inventive step (IS)	Claims	1-12	YES
	Claims	none	NO
Industrial applicability (IA)	Claims	1-12	YES
	Claims	none	NO

2. Citations and explanations (Rule 70.7)

Reference is made to the following documents:

D1: JP A 8-235751

D2: US-A-4506323

Novelty

None of the cited prior art describes auxiliary store selecting circuit in a computer system with multifunction. Therefore claim 1-12 are new.

Inventive step

D1 is about MAGNETIC DISK DRIVE CONTROLLER which realize a high speed and large capacity with an inexpensive general HDD by instructing seek operation to all of plural hard disk drives(HDD) based on access information, selecting the specified HDD and making it perform write-in/read-out. D2 is about CACHE/DISK FILE STATUS INDICATOR with data protection feature. The prior arts have function of controlling disk drive, but there is no indication of multifunction and it's selecting method. Therefore inventive step can be acknowledged.

Industrial application

Claim 1-12, relating to auxiliary store selecting circuit in a computer system, are considered to be industrially applicable.

PATENT COOPERATION TREATY

PCT

INTERNATIONAL SEARCH REPORT

(PCT Article 18 and Rules 43 and 44)

Applicant's or agent's file reference 070-PA934	FOR FURTHER ACTION see Notification of Transmittal of International Search Report (Form PCT/ISA/220) as well as, where applicable, item 5 below.	
International application No. PCT/KR00/00718	International filing date (<i>day/month/year</i>) 05 JULY 2000 (05.07.2000)	(Earliest) Priority Date (<i>day/month/year</i>) 10 JULY 1999 (10.07.1999)
Applicant 911 COMPUTER CO., LTD. et al		

This International search report has been prepared by this International Searching Authority and is transmitted to the applicant according to Article 18. A copy is being transmitted to the International Bureau.

This international search report consists of a total of 2 sheets.

☐ It is also accompanied by a copy of each prior art document cited in this report.

1. Basis of the report

a. With regard to the language, the international search was carried out on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.

☐ the international search was carried out on the basis of a translation of the international application furnished to this Authority (Rule 23.1(b)).

b. With regard to any nucleotide and/or amino acid sequence disclosed in the international application, the international search was carried out on the basis of the sequence listing:

☐ contained in the international application in written form.

☐ filed together with the international application in computer readable form.

☐ furnished subsequently to this Authority in written form.

☐ furnished subsequently to this Authority in computer readable form.

☐ the statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.

☐ the statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

2. ☐ Certain claims were found unsearchable (See Box I).

3. ☐ Unity of invention is lacking (See Box II).

4. With regard to the title,

☐ the text is approved as submitted by the applicant.

☒ the text has been established by this Authority to read as follows:

AUXILIARY STORE SELECTING CIRCUIT FOR USE IN COMPUTER SYSTEM WITH MULTIFUNCTION AND SELECTING THEREFOR

5. With regard to the abstract,

☒ the text is approved as submitted by the applicant.

☐ the text has been established, according to Rule 38.2(b), by this Authority as it appears in Box III. The applicant may, within one month from the date of mailing of this international search report, submit comments to this Authority.

6. The figure of the drawing to be published with the abstract is Figure No. 2

☐ as suggested by the applicant.

☒ because the applicant failed to suggest a figure.

☐ because this figure better characterizes the invention.

☐ None of the figures.

A. CLASSIFICATION OF SUBJECT MATTER**IPC7 G06F 1/00**

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC7 G06F 1/00, IPC7 G06F 3/06, IPC7 G11B 19/02

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Korean Patents and applications for inventions since 1975

Korean Utility models and applications for Utility models since 1975

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

APS

EDOC

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	JP 8-235751 A (NEC) 13 SEPTEMBER 1996	1-12
A	US 4506323 A (SPERRY CORPORATION) 19 MARCH 1985	1-12

☐

Further documents are listed in the continuation of Box C.

☐

See patent family annex.

* Special categories of cited documents:

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier application or patent but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

"&" document member of the same patent family

Date of the actual completion of the international search

23 NOVEMBER 2000 (23.11.2000)

Date of mailing of the international search report

28 NOVEMBER 2000 (28.11.2000)

Name and mailing address of the ISA/KR

Korean Industrial Property Office
Government Complex-Taejon, Dunsan-dong, So-ku, Taejon
Metropolitan City 302-701, Republic of Korea

Facsimile No. 82-42-472-7140

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(72) Inventor; and

(21) International Application Number: PCT/KR00/00718

(75) Inventor/Applicant (for US only): PARK, Seung,
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(22) International Filing Date: 5 July 2000 (05.07.2000)

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(25) Filing Language: English

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JP, SG, US.

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1999/27924	10 July 1999 (10.07.1999)	KR
2000/26361	17 May 2000 (17.05.2000)	KR

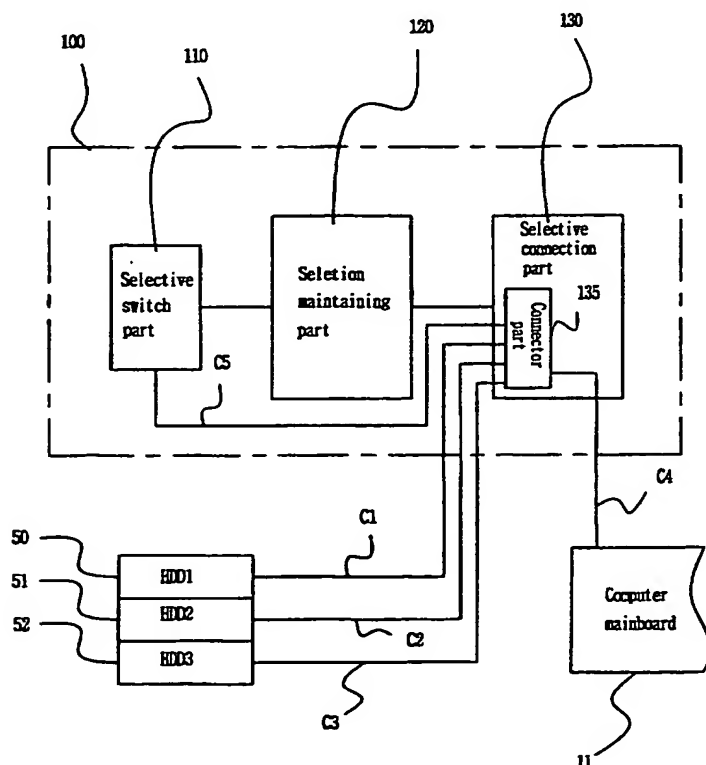
Published:

- With international search report.
- Before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments.

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COMPUTER CO., LTD. [KR/KR]; 1107, Poonglim
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135-784 (KR).

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(54) Title: AUXILIARY STORE SELECTING CIRCUIT FOR USE IN COMPUTER SYSTEM WITH MULTIFUNCTION AND SELECTING METHOD THEREFOR



(57) Abstract: In the auxiliary store selecting circuit for use in a computer system with multifunction and its selecting method, in which a continuous selection for any one hard disk out of numerous hard disks is valid during a power-on through a just manipulation of an external switch in one computer system with multifunction which has an installment of numerous hard disks, the auxiliary store selecting circuit adequate to the computer system for the construction of multifunction comprises a selective switch part for generating a selection signal for selecting one out of numerous auxiliary memories in response to a selective manipulation; a selection maintaining part for maintaining the generated selection signal till a power-off even though there is any selective manipulation after the generation of the selection signal in the selective switch part, and then outputting it; and a selective connection part for performing a connection between the selected auxiliary memory and a computer main board in response to the output selection signal from the selection maintaining part, thereby enabling each user to individually use the auxiliary memory so as to protect auxiliary memories and information of other users from any influence.

WO 01/04731 A1

AUXILIARY STORE SELECTING CIRCUIT FOR USE IN COMPUTER SYSTEM WITH MULTIFUNCTION AND
SELECTING METHOD THEREFOR

BACKGROUND OF THE INVENTION

5

Field of the Invention

The present invention relates to a computer system, and more particularly, to an auxiliary store selecting circuit in a computer system with multifunction, and its selecting method.

10

Discussion of Related Art

15

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In general, it is well known and utilized a microcomputer including a personal computer and its workstation, as an information processing system which receives constant information and processes it on the basis of a given procedure and outputs its result. In the computer system provided as a common designation of a hardware in such computer, a software necessary for its operation and an application system concerned with its utilization; a systematic environment such as an operating system and a use language etc. is much various, and its users are also classified into various sorts according to its usage.

25

Multiplex user system and multitasking system are herein disclosed to meet various requirements of computer system users and are well known in a conventional technique. This multiplex user system is the computer system that several users can use its equipments at the same time, and this multitasking system is the computer system that several works can be executed simultaneously. For example, however, in case one computer system is purchased for one home, there maybe is an environmental difference due to its usage that parent uses one computer and a child uses it. In order to execute a specific work though

they use the same environment, it is needed to install a system environment different from a current using environment. In this case, there is no any settlement in the conventional system. In other words, the computer system of the present time can not well provide multifunction that the above requirements can be satisfied in case that a plural number of users use one computer system in mutually different environments at different time.

A hard disk drive as an auxiliary memory can be installed additionally and a CMOS set-up can be executed, in the conventional computer system, but such installment and execution are almost to extend a capacity of data on the basis of an expert's viewpoint and are the concept different from multifunction in which numerous users can smoothly use the computer system in different environments at different time so as to construct the multifunction.

Therefore it is required a technique through which a plural number of users can smoothly utilize one computer system in mutually different systematic environments at different time. For example, further, parent may work at their desired systematic environment in case data stored in the hard disk drive etc. of the computer system is damaged owing to a mistake use of a child, if the requirements are settled.

Some technique is also required to definitely protect the stored information or data from a hacking or computer virus, in a connective environment between a computer system and a communication network such as an internet, the connective environment is provided according that the communication network is widely spread.

SUMMARY OF THE INVENTION

It is, therefore, a primary object of the present invention to

provide a circuit technique through which several users can smoothly use one computer system in mutually different environments at different time.

Another object of the present invention is to provide an auxiliary store selecting circuit and its selecting method, in which
5 each user can use an independent auxiliary memory to protect the auxiliary memory and information of other users therefrom.

A still another object of the present invention is to provide an auxiliary store selecting circuit and its selecting method, in which
10 a continuous selection for any one hard disc out of numerous hard discs is valid during a power-on just through a manipulation of an external switch in one computer system which has an installment of numerous hard discs for the sake of the construction of multifunction.

A further another object of the invention is to provide an auxiliary store selecting circuit capable of definitely protecting the
15 stored information or data from a hacking or computer virus, in a connective environment between a computer system and a communication network such as an internet.

To achieve the above objects and advantages, in accordance with
20 the present invention, an auxiliary store selecting circuit adequate to a computer system to construct an inventive multifunction comprises a selective switch part for generating a selection signal for selecting one out of numerous auxiliary memories in response to a selective manipulation; a selection maintaining part for maintaining the
25 generated selection signal till a power-off even though there is any selective manipulation after the generation of the selection signal in the selective switch part, and then outputting it; and a selective connection part for performing a connection between the selected

auxiliary memory and a computer main board in response to the output selection signal from the selection maintaining part.

The auxiliary store selecting method in a computer system on which a plurality of auxiliary memories are mounted to construct the multifunction, includes the steps of: generating a selection signal for selecting one out of numerous auxiliary memories in response to a selective manipulation; holding the generated selection signal till a power-off; and performing an electric connection between a computer main board and an auxiliary memory to be selected, in response to the held selection signal.

In such inventive construction one out of a plural number of hard disks in one computer system can be selected to execute the work required by a user, thereby obtaining the construction of multifunction, namely, enabling each user to individually use the auxiliary memory so as to protect auxiliary memories and information of other users therefrom, and further protecting the computer system from the hacking or computer virus even in connecting the computer system to a communication network such as an internet.

BRIEF DESCRIPTION OF THE ATTACHED DRAWINGS

The accompanying drawings, which are included to provide a further understanding of the invention and are incorporated in and constitute a part of this specification, illustrate embodiments of the invention and together with the description serve to explain the principles of the invention.

In the drawings: _

Fig. 1 represents a visual diagram of a computer system with

multifunction in accordance with the present invention;

Fig. 2 indicates a block diagram of an auxiliary store selecting circuit in the preferred embodiment of the present invention;

Fig. 3 depicts a detailed circuit diagram showing one embodiment
5 of an auxiliary store selecting circuit in the invention;

Fig. 4 sets forth a connected-pin disposition diagram of a connection part shown in Fig. 2;

Fig. 5 illustrates a detailed circuit diagram showing another
embodiment of the auxiliary store selecting circuit shown in Fig. 2;
10 and

Fig. 6 provides a disposition diagram for connected-pins and circuit elements in another embodiment of the connection part shown in Fig. 2.

15 DETAILED DESCRIPTION OF PREFERRED EMBODIMENT

The present invention is described in detail as follows, referring to the accompanying drawings which represent an auxiliary store selecting circuit proper to a computer system with multifunction and indicate its selecting method. In the drawings the same or similar
20 functional blocks are indicated by the same or similar reference numbers.

Fig. 1 depicts a visual diagram of a computer system with multifunction in accordance with the present invention. In Fig. 1, the computer system includes a computer main body(10) on which a
25 microprocessor and a main memory are mounted, a plurality of hard disk drives(50,51,52) as the auxiliary memory, floppy disk drives(2,4), an auxiliary store selecting circuit(100) for selecting one out of the hard disk drives(50,51,52), a key board(30) as an input unit, a mouse(40)

and a monitor(20) as a display output unit. A printer etc. as a printing output unit can be also connected thereto through the computer main body(10) and a cable.

In Fig. 1 for the inventive preferred embodiment, the auxiliary store selecting circuit(100) is installed on a substantially upper part of the computer main body(10), and manipulation parts of selective switches(S1,S2,S3) corresponding to respective hard disk drives in a case of three hard disk drives(50,51,52), and front faces of light emitting diodes(LED)(D4,D5,D6) corresponding to the respective selective switches(S1,S2,S3), are seen as the external view thereof, the selective switches being for performing its selection and the light emitting diodes(LED) being for selectively performing luminescence.

Fig. 2 shows a schematic block diagram of an auxiliary store selecting circuit(100) shown in Fig. 1. Referring to Fig. 2, the auxiliary store selecting circuit(100) is composed of a selective switch part(110) for generating a selection signal for selecting one out of a plurality of auxiliary memories in response to a selective manipulation; a selection maintaining part(120) for maintaining the generated selection signal till a power-off even though there is any selective manipulation after the generation of the selection signal in the selective switch part(110), and then outputting it; and a selective connection part(130) for performing a connection between the selected auxiliary memory and a computer main board in response to the output selection signal from the selection maintaining part(120). In the drawing, cables(C1,C2,C3) having numerous connection lines(for example, forty connection lines in a case of forty pins) connect hard disk drives(50,51,52) as the auxiliary memory to a connector part(135). A cable(C4) takes charge of a connection between the connector part(135)

and a computer main board(11), and a cable(C5) is provided as four lines in a case of three hard disk drive(50,51,52) and takes charge of a connection between the selective switch part(110) and the connecter part(135).

5 Fig. 3 sets forth a detailed circuit diagram of one embodiment in the auxiliary store selecting circuit(100) shown in Fig. 2. In case there are three hard disk drives, the selective switch part(110) is composed of three selective switches(S1,S2,S3) having a two-circuit three-key interlocking method. For example, in case a user tries to
10 select a first hard disk drive(50), he selects and presses the selective switch(S1) and then switch nodes N3 and N6 are connected and N2 and N5 are connected, each other. Then switch nodes N1 and N4 are opened each other. A selection signal is generated by such manipulation in the selective switch part(110). Lines HIN28, H1 28, H2 28, H3 28 shown in
15 the selective switch part(110) correspond to the cable(C5) of Fig. 2 and also mean jumper lines as a cable select. A number 28 in the hard disk drive based on a general IDE(Integrated Development Environment) system represents a pin to transmit a signal for recognizing one designated hard disk drive from a microprocessor of a computer.

20 The selection maintaining part(120) is made up of a flipflop integrated circuit(IC1), resistances (R7,R8,R9,R10,R11,R12,R13), light emitting diodes(D4,D5,D6) and a capacitor(C4) so as to maintain the generated selection signal till a power-off and output it, in case the selective switch part(110) is constructed with three selective
25 switches(S1,S2,S3). Herewith a reference number B+ represents supply voltage of about 5V generally. The light emitting diodes(D4,D5,D6) are indicated as the same reference numbers in the visual diagram of Fig. 1, which is to visually display for the user that the hard disk drive

of what times was currently selected. A latched output selection signal provided from one out of lines(S11,S22,S33) respectively connected between one side ends of the resistances(R10,R11,R13) and respective anodes of the LEDs(D4,D5,D6) is provided as a "high" level. In other words, in case the selective switch(S1) is selected, a high signal is continuously provided during a power-on on the line(S11) among the lines(S11,S22,S33), and a "low" signal is provided on each of the lines(S22,S33). In this case the LED(D4) out of the LEDs(D4,D5,D6) luminesces. The selection signal generated by a latch function of the flipflop integrated circuit(IC1) is maintained till a power-off, even though there is another switch's selective manipulation in a continuous power-on state after the selection signal is first generated by the manipulation of the switch(S1).

In this embodiment, a custom integrated circuit "74LS175" is used as the flipflop integrated circuit(IC1) and the resistances (R7,R8,R9,R10,R11, R12,R13) have each value of 4.7k Ω , 1k Ω , 1k Ω , 147 Ω , 147 Ω , 1k Ω and 147 Ω . The LEDs(D4,D5,D6) are used as general LEDs, and the capacitor(C4) has a value of 22 μ F. These elements may be replaced by other equivalent elements if there is other case, and the resistance value and a capacity value can be also changed herein.

The selective connection part(130) for performing a connection between the selected auxiliary memory and the computer main board(11) is composed of resistances(R1,R2,R3,R4,R5,R6), capacitors(C1,C2,C3), transistors(Q1,Q2,Q3), circuit protecting diodes(D1,D2,D3), and relays(RL1,RL2,RL3). In case the high signal is applied onto only the line(S11), only the transistor(Q1) among the transistors(Q1,Q2,Q3) becomes a turn-on state to thus drive only the relay(RL1). Thereby the pin 23 of the hard disk drive HDD1, namely, H1 23, is connected to the

pin 23 of the main board(11), namely, HIN 23, each other, and the pin 25 of the hard disk drive HDD1, H1 25, is connected to the pin 25 of the main board(11), HIN 25, wherein the pin 23 is to provide read data and the pin 25 is to provide write data. Consequently, the pins 23 and 25 of one hard disk drive selected among three hard disk drives are electrically connected with the respective pins 23 and 25 of the computer main board(11). Also the pins 23 and 25 of the hard disk drives not selected are isolated from the respective pins 23 and 25 of the computer main board(11), whereby the desired objects can be obtained.

In this embodiment, the resistances (R1,R2,R3,R4,R5,R6) have each value of $2k\Omega$, $10k\Omega$, $2k\Omega$, $10k\Omega$, $2k\Omega$ and $10k\Omega$, and the capacitors(C1,C2,C3) have each a value $22\mu F$. All the transistors(Q1,Q2,Q3) are constructed by each bipolar transistor "2SC1815". All the diodes(D1,D2,D3) are provided as each "1N4148" and all the relays(RL1,RL2,RL3) are provided as each custom 5V 4pin relay. Such elements may be replaced by other equivalent elements in case there exists other case, and the resistance value and the capacity value can be also changed herein.

Fig. 4 illustrates a connected-pin disposition diagram of the connector part(135) shown in Fig. 2 and shows a disposition state of pins in the connector part connected with the hard disk drives in case there are three hard disk drives. Each of pins 23,25,28 in a set 4 is electrically isolated one another in an individual connector, and corresponds to and are connected to a selected pin 3 of HIN through an operation of the relays mounted on the printed circuit board. This pins' disposition is compatible with and applicable to the hard disk drive of the future E(Enhanced)IDE system almost without change.

Another inventive embodiment is described referring to Figs. 5

and 6, as follows.

In another preferred embodiment concerning of Fig. 2, with reference to Fig. 5 it shows a detailed circuit of the auxiliary store selecting circuit(100). The detailed constructive elements of Fig. 5 have a little different points from them shown in Fig. 3, thus the corresponding circuit blocks are represented as similar reference numbers.

Referring to Fig. 5, in case there are three hard disk drives, a selective switch part(110a) is composed of three selective switches(S1A,S1B,S1C) having a two-circuit three-key interlocking method. Herewith the selective switches(S1A,S1B,S1C) correspond respectively to three selective switches(S1,S2,S3) of Fig. 1, with a performance of the same function. For example, in case a user tries to select a first hard disk drive(50), he selects and presses the selective switch(S1A) and then the switch nodes N3 and N6 are connected and N2 and N5 are connected, each other. Then the switch nodes N1 and N4 are opened each other. A selection signal is generated by such manipulation in the selective switch part(110a). In case the selective switch part(110a) is composed of three selective switches(S1A,S1B,S1C), a selection maintaining part(120a) is made up of a flipflop integrated circuit(U1), resistances(R1,R2,R3,R7), light emitting diodes(LED1,LED2,LED3) and a capacitor(C1) so as to maintain the generated selective signal till a power-off and output it. Herewith, operating supply voltage is about 12V. The light emitting diodes(LED1,LED2,LED3) respectively correspond to the LEDs(D4,D5,D6) shown in the visual diagram of Fig. 1, which visually informs the user of which hard disk drive was selected. A latched output selection signal provided from one out of the lines(S11,S22,S33) respectively

connected between one side ends of the resistances(R1,R2,R3) and respective anodes of the LEDs(LED1,LED2,LED3) is provided as a "high" level. In other words, in case the selective switch(S1A) is selected, a high signal is continuously provided during a power-on on the line(S11) among the lines(S11,S22,S33), and a "low" signal is provided on each of the lines(S22,S33). In this case the light emitting diode(LED1) out of the LEDs(LED1,LED2,LED3) luminesces. The selection signal generated by the latch function of the flipflop integrated circuit(U1) is maintained till a power-off, even though there is other switch's selective manipulation in a continuous power-on state after the selection signal is first generated by the manipulation of the switch(S1).

In this embodiment, it is used the flipflop integrated circuit(U1) as a custom integrated circuit "4042", and the resistances(R1,R2,R3,R7) have each value of $1k\Omega$, $1k\Omega$, $1k\Omega$ and $4.7k\Omega$. The LEDs(LED1,LED2,LED3) are used as general LEDs, and the capacitor(C1) has a value of $22\mu F$. Such elements may be replaced by other equivalent elements in case there is other cases, and the resistance value and the capacity value can be also changed herein. A reference number "HPIN" of the selection maintaining part(120a), which is not described here, represents a connecter and takes charge of a connection between lines. The selection maintaining part(120a) operates at about 12V, differently from an operation of the selection maintaining part(120) of Fig. 3 driven by the operating voltage of 5V, therefore an on-resistance in switching is reduced to represent a reduced noise level, which ensures an operational reliability by a definite switching operation.

The selective connection part(130a) for performing a connection between the selected auxiliary memory and the computer main board(11)

is composed of resistances(R8,R9), transistors(Q1,Q2), circuit protecting diodes(D1,D2) and relays(RL1,RL2). In case the high signal is applied onto only the line(S11), only the transistor(Q1) among the transistors(Q1,Q2) becomes a turn-on state to thus drive only the relay(RL1). Whereby the pin 23 of the hard disk drive HDD1, namely, H1 23, is connected to the pin 23 of the main board(11), namely, HIN 23, each other, and the pin 25 of the hard disk drive HDD1, H1 25, is connected to the pin 25 of the main board(11), HIN 25, each other.

Herewith the pin 23 is to provide a read control signal and the pin 25 is to provide a write control signal. Consequently, the pins 23 and 25 of one hard disk drive selected among three hard disk drives are electrically connected with each of the pins 23 and 25 of the computer main board(11), and the pins 23 and 25 of the hard disk drives not selected are isolated from each of the pins 23 and 25 of the computer main board(11), whereby the inventive desired object can be obtained. The resistances(R8,R9) have each value of $6.8k\Omega$ and $6.8k\Omega$, and all the transistors(Q1,Q2) are constructed as each NPN type bipolar transistor "2SC1815". All the diodes(D1,D2) are provided as each "1N4148" and all the relays(RL1,RL2) are provided as each custom 12V 8pin relay. Such elements may be replaced by other equivalent elements in case there exists other cases, and the resistance value and the capacity value can be also changed herein. The selective connection part(130a) has the small number of elements in its components in comparison with the construction of the selective connection part(130) of Fig. 3, that is, can obtain the compact construction, together with characteristics of a prominent noise immunity and operating voltage of 12V for the sake of an operational reliability.

Fig. 6 provides a disposition diagram for connected-pins and

circuit elements in another embodiment of the connector part shown in Fig. 2. In Fig. 6, connectors(135-1,135-2,135-3,135-4)are installed to perform the same function as the element 135 of Fig. 4. Reference numbers CN1,CN2,CN3 represent connectors for use of displayer connection, and R1,R2,R3 are connected with the connectors for use of the connection, the connectors being coupled with the LED and all these resistors R1,R2,R3 having a resistance value of 1k Ω . Reference numbers 137 and 138 indicate connectors for use of a power connection. In Fig. 6 a switch block 136 is additionally installed in comparison with the case of Fig. 4. Such additional installment of the switch block(136) settles an inconvenience of operating the jumper wire as the afore-mentioned cable select in achieving the inventive object. That is to say, it is released from an inconvenience of operating the jumper wire to decide a master/slave in the hard disk drive. This switch block(136) is constructed with four switches(SW1-SW4) and each one switch((SW1) among them can be embodied by an integrated circuit element "4066" IC for an IDE control.

In Fig. 6, also, the master can be selectively used through a control of a terminal for use of the IDE(HDD/CD) without needing a manipulation of a user. For example, as the replacement of the main board in which a function of a chip select(C3) is not smoothly supplied in an ATA(AT bus attachment) as a new standard of the IDE, the master/slave can be selectively used to settle the defects. A required hard disk drive can be selectively used by efficiently connecting and cutting off a pin concerned with a detection among IDE pins. In this case, an IRQR(Interrupt Request) of a number 31, a PDIAG of a number 34, a CS0 of a number 37, a CS1 of 38 and a DASP of 39 are additionally controlled. The connection and cutting-off operations is gotten by

maintaining the line of the selected side as an on-state and the line not selected as an off-state through a use of the selection signal in the flipflop.

That is, in case it is decided to need to construct the multifunction by a user in his intension that the computer will be used by other persons including the user himself and several environments need to be built up therein, in purchasing one computer system, the user can purchase and install a plural number of hard disk drives and mount the above-mentioned auxiliary store selecting circuit(100) as shown in Fig. 1. Then, in using it, when only an external switch is simply manipulated and one out of the drives is continuously selected unless a main power switch(6) shown in Fig. 1 is turned off, namely, during a power-on.

According to that, it is available to build up a desired environmental construction by the number of hard disk drives installed, in other words, for example, an OS environment and an environment according to a usage can be distinguished by the respective drives in its construction, wherein the OS environment is such as Win95-98, Win NT, OS/2, Linux, Unix, Win2000, etc. and the environment according to the usage is as game, work and graphic usages, etc. Also the construction can be distinguished according to a plurality of respective users. In such function, each independent work can be done by making one computer to get several kinds of environmental constructions and an advantage like a case that the user uses several computers can be gotten by just installing the hard disk drive. Also in case the computer system is connected to the communication network such as an internet and one specific hard disk among a plurality of hard disks is connected as a communication network usage, data stored in the rest hard disks

is protected from a hacking or computer virus. Thus, the other system can be protected therefrom in case numerous computer systems are connected through the LAN.

Accordingly, in accordance with the present invention, the
5 auxiliary store selecting circuit and its selecting method can be widely applied to a case of a trader or a student studying abroad who uses several languages, and also to cases that numerous users should utilize one computer at home or office, a computer should be utilized for uses of a work, a game, a graphic working and a communication, namely, should
10 be used in a classified working state, and also an emergence hard disk drive is required at places, for example, such as a game room etc. where computers should continuously operate for 24 hours.

In accordance with the present invention, as afore-mentioned, desired works can be separately executed by selecting one out of a
15 plurality of hard disks in one computer system, to thereby obtain the construction of multifunction. In addition, every user can use an independent auxiliary memory to whereby protect the auxiliary memory and information of other users.

Further, in case that the computer system is connected to a
20 communication network such as an internet and one specific hard disk among numerous hard disks is connected thereto as a communication network usage, data stored in the rest other hard disks can be protected from a hacking or computer virus. That is, there is relatively an advantage in a protection of information even though a plural number
25 of computer systems are connected by a local area network(LAN) one another.

Although the invention has been shown and described with respect to the preferred embodiments, it will be understood by those skilled

in the art that various changes and modifications may be made without departing from the spirit and scope of the invention as defined in the following claims. For example, only the hard disk drive as the auxiliary memory was herein described as one example but replacement
5 elements such as an EEPROM, a magnetic drum, etc. may be used as the auxiliary memory.

What is claimed is:

1. An auxiliary store selecting circuit adequate to a computer system with multifunction, comprising:

5 a selective switch part for generating a selection signal for selecting one out of numerous auxiliary memories in response to a selective manipulation;

 a selection maintaining part for maintaining the generated selection signal till a power-off even though there is the selective
10 manipulation after the generation of the selection signal in the selective switch part, and then outputting it; and

 a selective connection part for performing a connection between the selected auxiliary memory and a computer main board in response to the selection signal outputted from the selection maintaining part.

15

2. The circuit of claim 1, wherein said selective switch part is composed of selective switches based on a 2-circuit 3-key interlocking method by the number corresponding to the number of the auxiliary memories.

20

3. The circuit of claim 1, wherein said selection maintaining part includes at least a flipflop integrated circuit connected to said selective switch part.

25

4. The circuit of claim 1, wherein said selective connection part comprises a relay for performing an electric connection between specific pins of the auxiliary memory selected and specific pins of a computer main board, and a transistors for use of a driving, for driving said

relay.

5. The circuit of claim 4, wherein said specific pins includes a read pin and a write pin.

5

6. A method for selecting an auxiliary memory in a computer system on which a plural number of auxiliary memories are mounted to construct multifunction, comprising the steps of:

generating a selection signal for selecting one out of numerous auxiliary memories in response to a selective manipulation;

10

holding the generated selection signal till a power-off; and performing an electric connection between the auxiliary memory to be selected and a computer main board in response to the selection signal held.

15

7. The method of claim 6, wherein said auxiliary memory is a hard disk drive based on an IDE system.

8. A hard disk drive selecting circuit adequate to a computer system having an installment of a plurality of hard disk drives, comprising:

20

a selection switching unit for generating a selection signal for selecting one out of the hard disk drives in response to a selective manipulation of a user;

25

a selection maintaining unit having a latch circuit therein, for continuously maintaining the selection signal of the selection switching unit during a power-on, and then outputting it; and

a selection connecting unit for performing an electric

connection between read and write pins of the hard disk drive selected and its corresponding pins of a computer main board in response to the selection signal outputted from the selection maintaining unit.

5 9. The circuit of claim 8, wherein said selection maintaining unit further comprises a light emitting diode to visually display and inform the outside of that a specific hard disk drive was selected in response to a selective manipulation.

10 10. An auxiliary store selecting circuit adequate to a computer system with multifunction, comprising:

 a selective switch part for generating a selection signal for selecting one out of numerous auxiliary memories installed in the computer system in response to a selection;

15 a selection maintaining part for maintaining the generated selection signal till a power-off even though there is the selective manipulation after the generation of the selection signal in the selective switch part, and then outputting it; and

 a selective connection part including a connector unit for
20 automatically performing a connection between the selected auxiliary memory and a computer main board in response to the selection signal outputted from the selection maintaining part.

 11. The circuit of claim 10, wherein said selection maintaining
25 part includes at least a flipflop integrated circuit connected to said selective switch part and operating at about 12V.

 12. The circuit of claim 10, wherein said connector unit contains

a switch block constructed with numerous connectors and numerous integrated circuit elements.

FIG.1

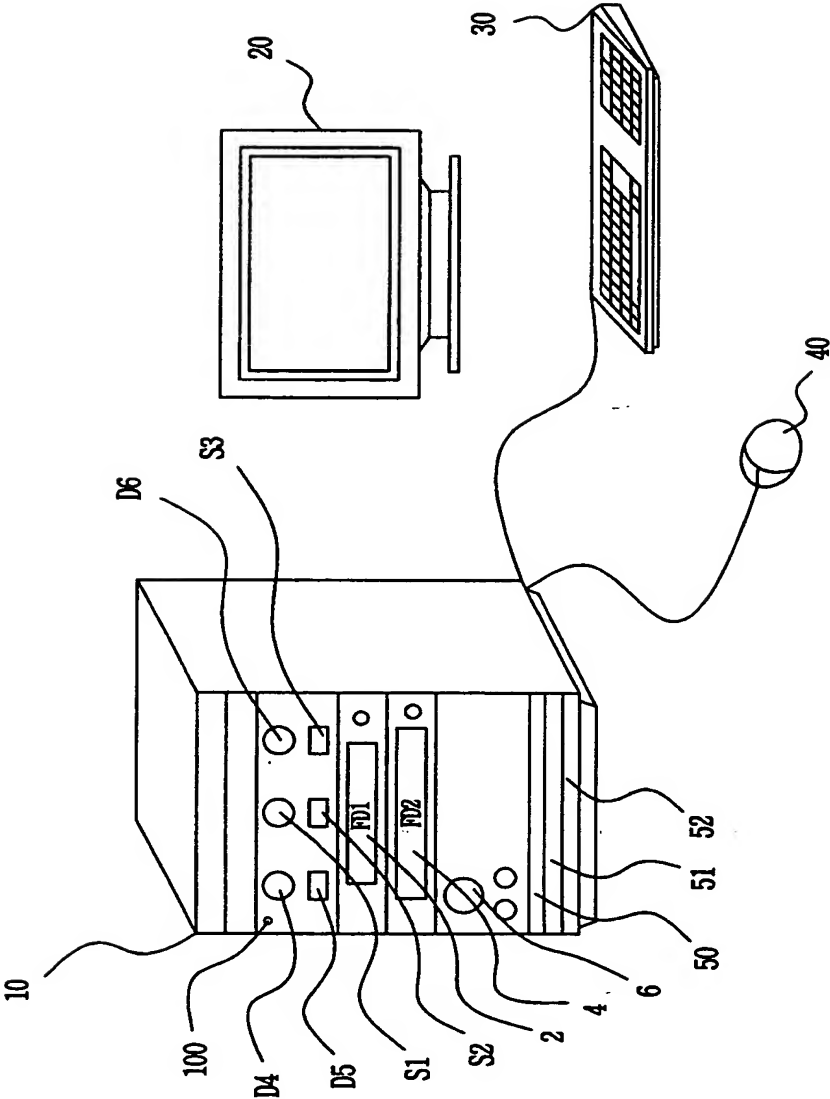
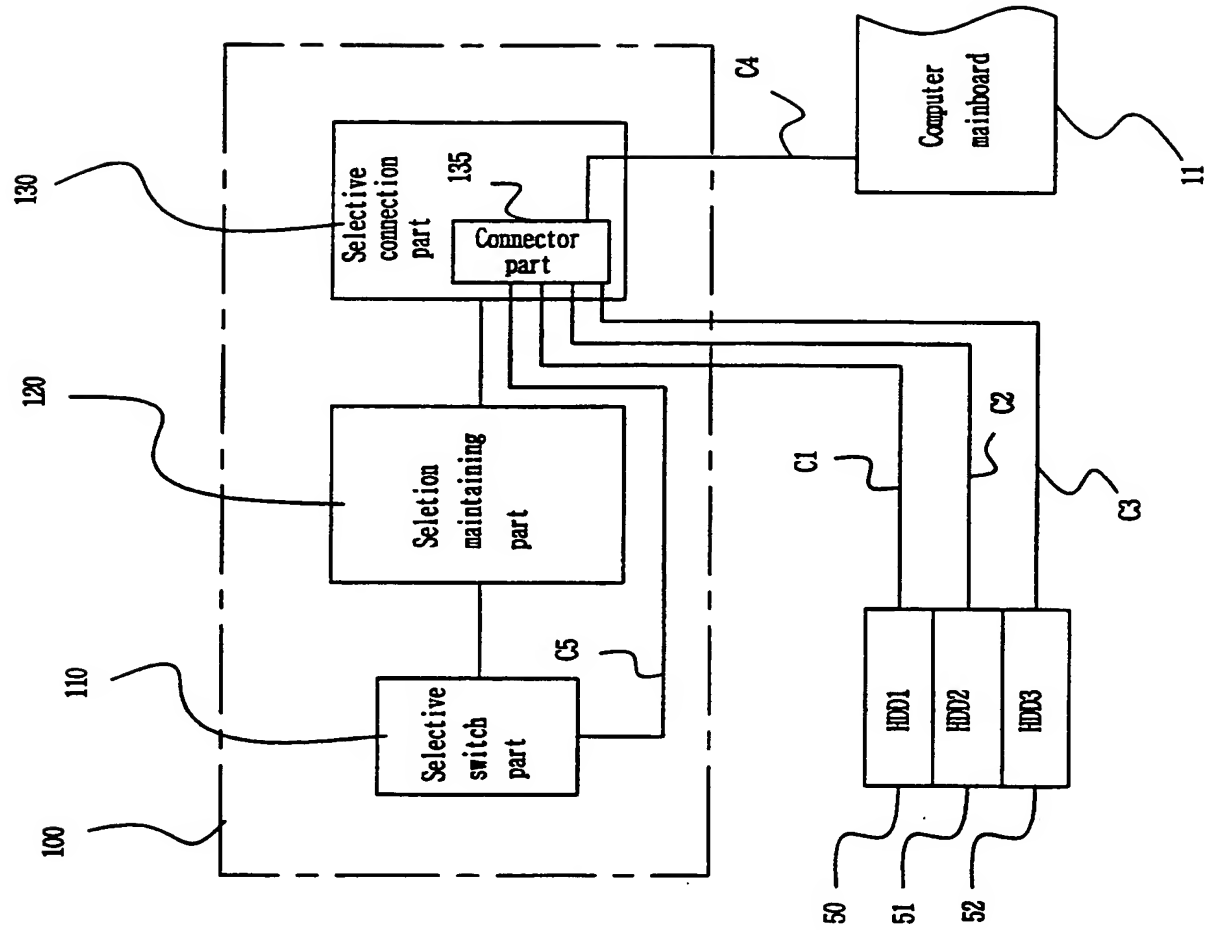


FIG. 2



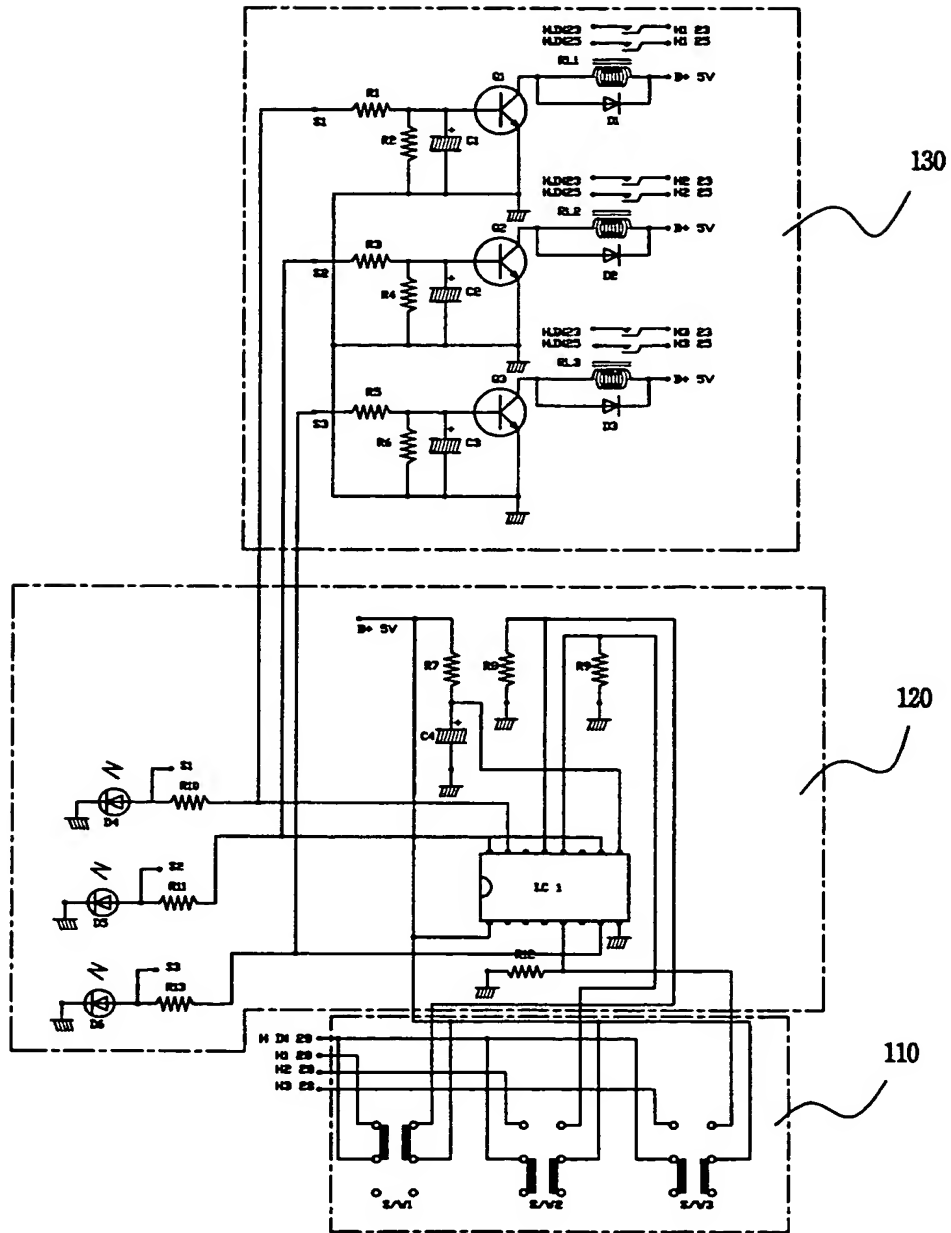


FIG.3

FIG. 4

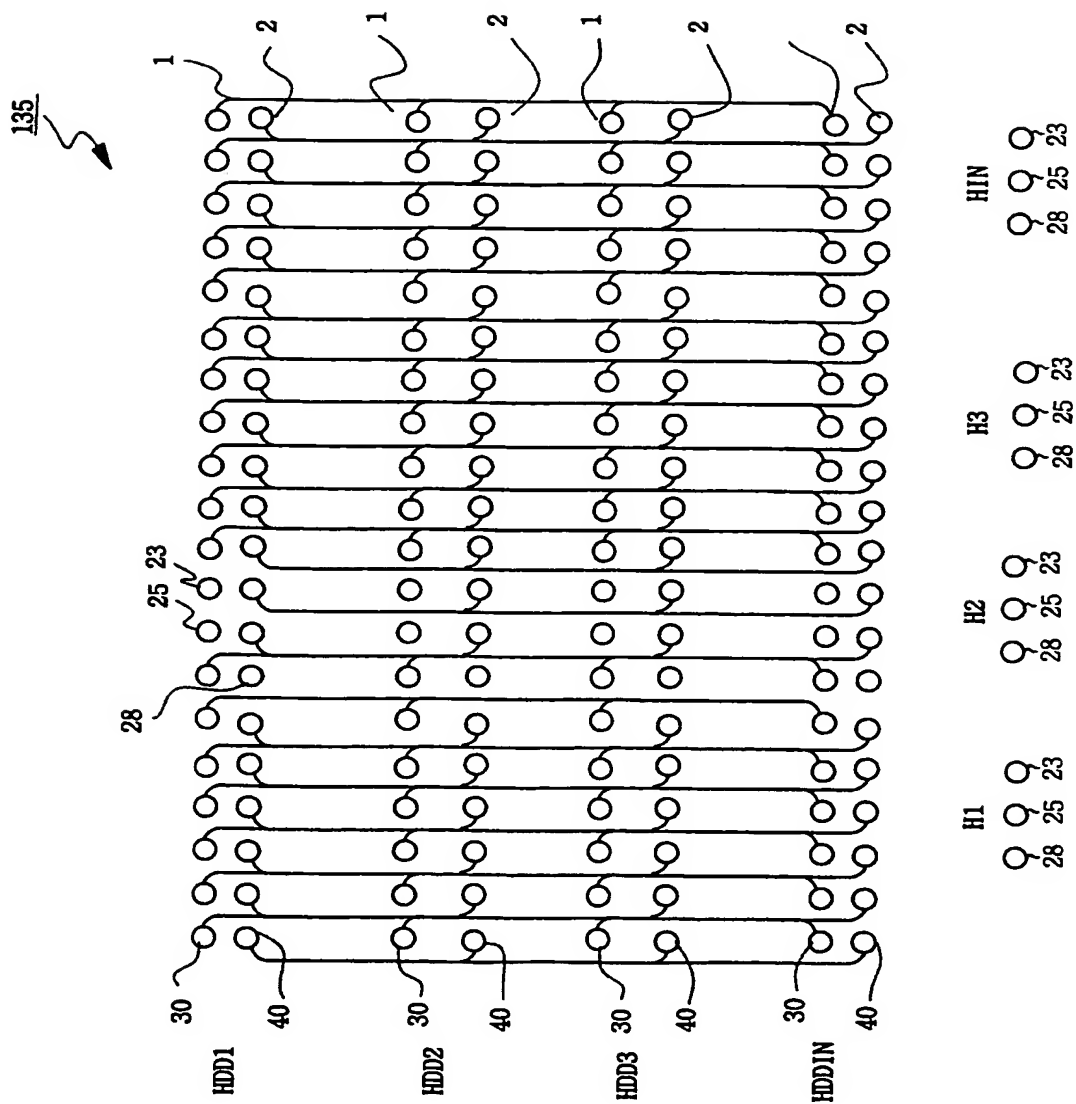


FIG. 5

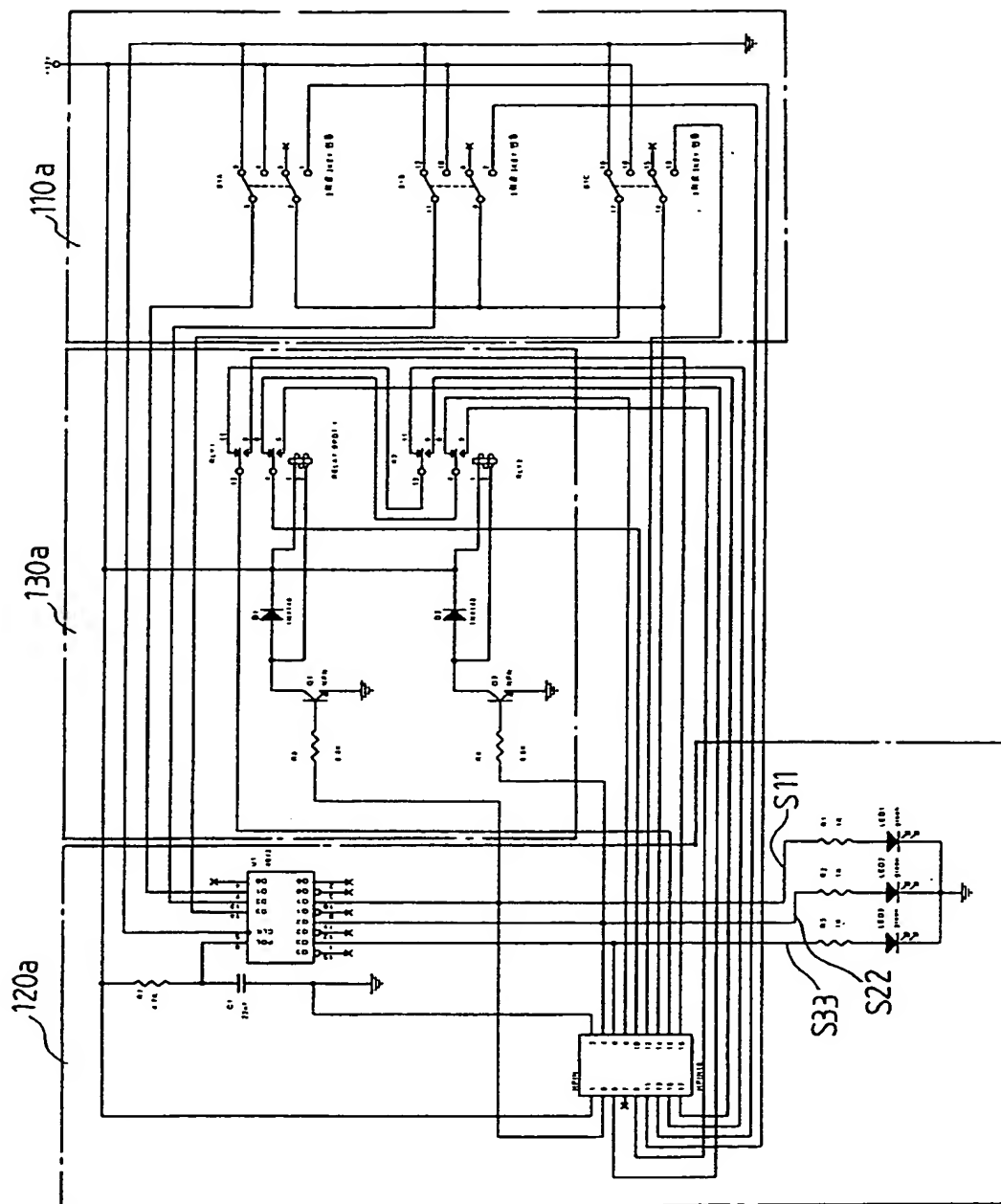
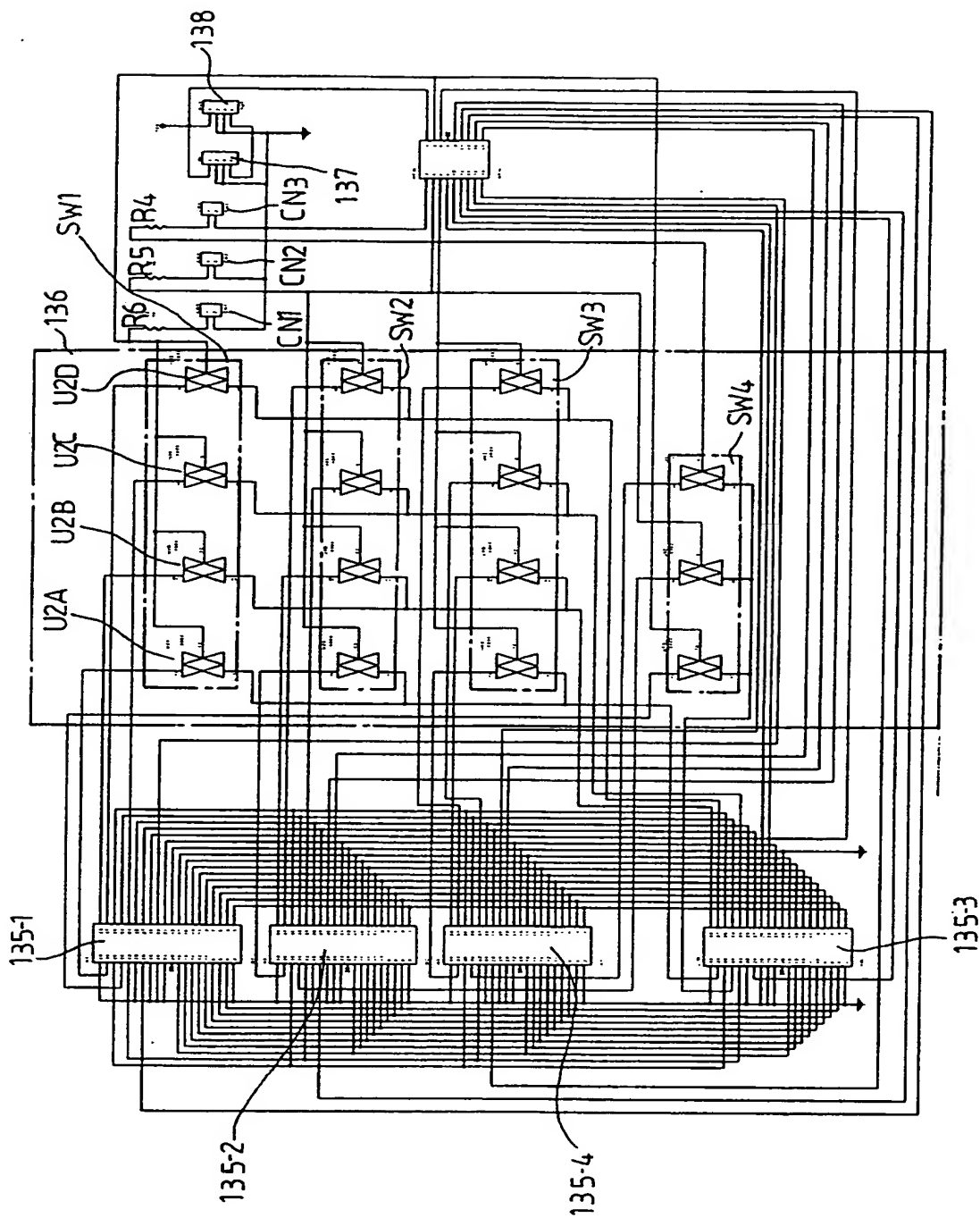


FIG. 6



INTERNATIONAL SEARCH REPORT

international application No.
PCT/KR00/00718**A. CLASSIFICATION OF SUBJECT MATTER****IPC7 G06F 1/00**

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC7 G06F 1/00, IPC7 G06F 3/06, IPC7 G11B 19/02

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Korean Patents and applications for inventions since 1975

Korean Utility models and applications for Utility models since 1975

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

APS

EDOC

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	JP 8-235751 A (NEC) 13 SEPTEMBER 1996	1-12
A	US 4506323 A (SPERRY CORPORATION) 19 MARCH 1985	1-12

☐ Further documents are listed in the continuation of Box C.☐ See patent family annex.

* Special categories of cited documents:

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